Environmental Performance Indicators

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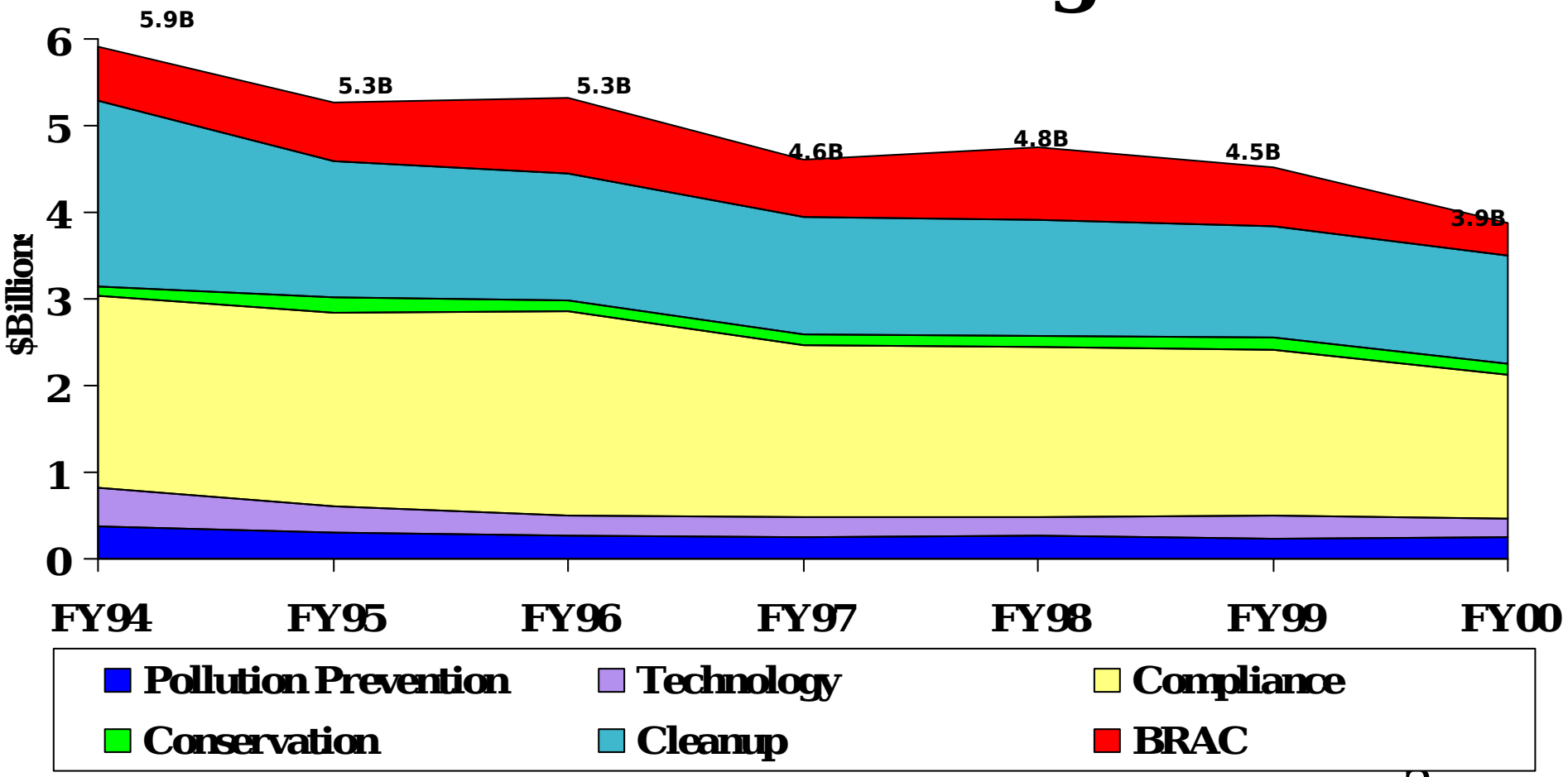
(Environmental Security)

Environmental Security -- Defending Our Future

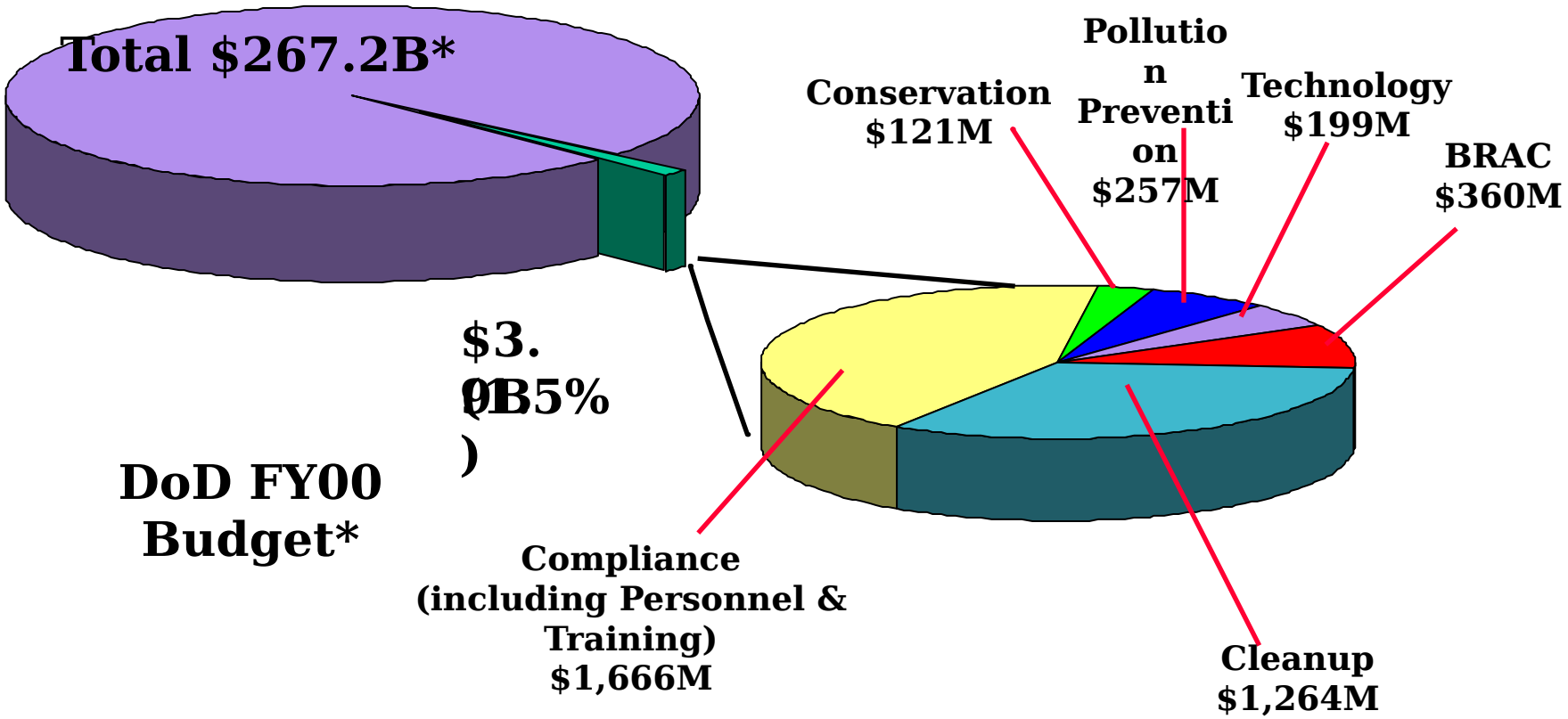
Outline

- **FY 00 Environmental Security Budget**
- **Environmental Security Performance**
- **Environmental Performance Indicators**
  - **Background**
  - **Framework**
  - **Survey Results**
  - **Conclusions**
- **Next Steps**

Environmental Security Programs FY00 Budget

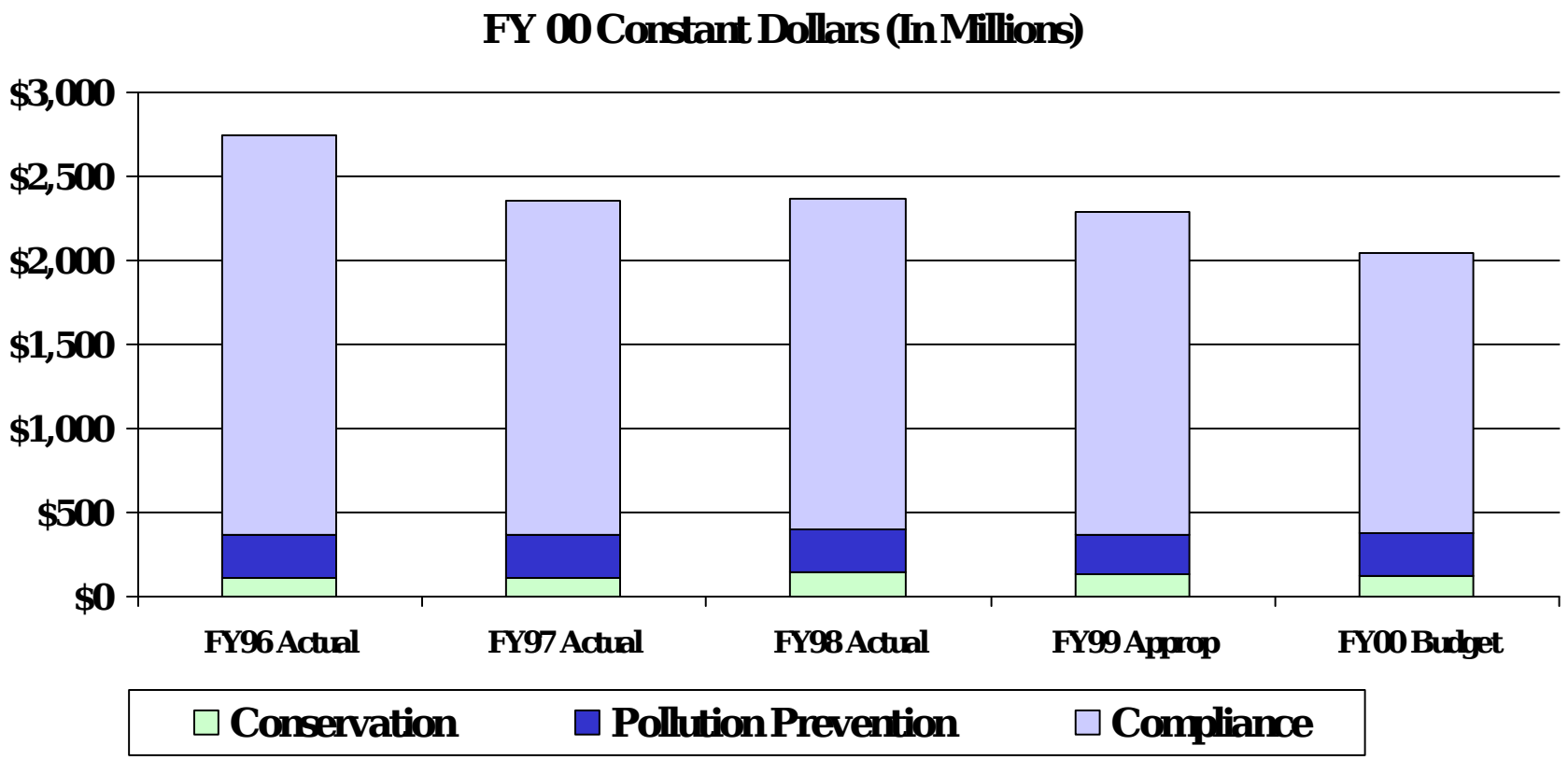


Environmental Security FY00 Budget

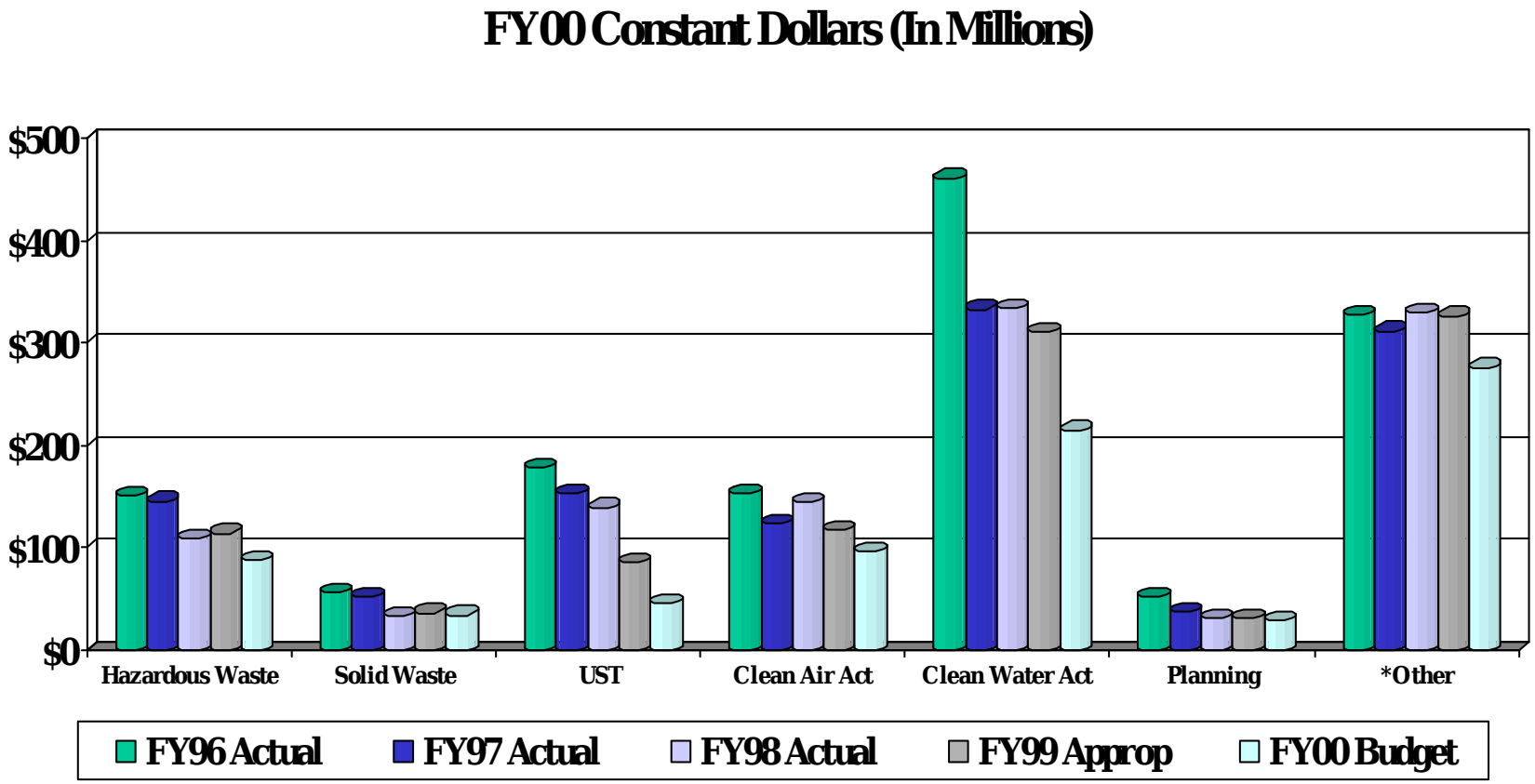


*O51 Functions

Environmental Quality FY 00 President's Budget

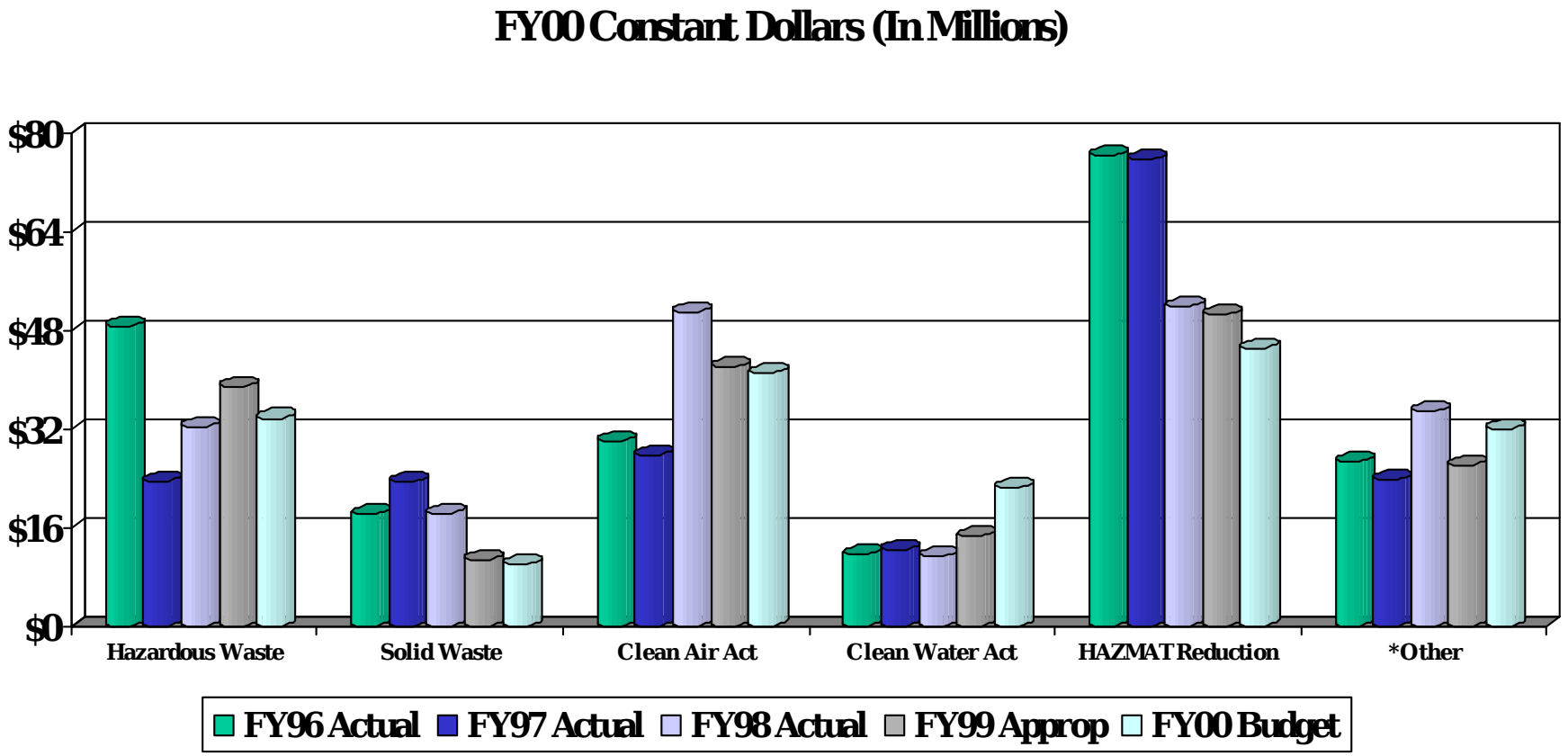


Compliance Non-Recurring Investments



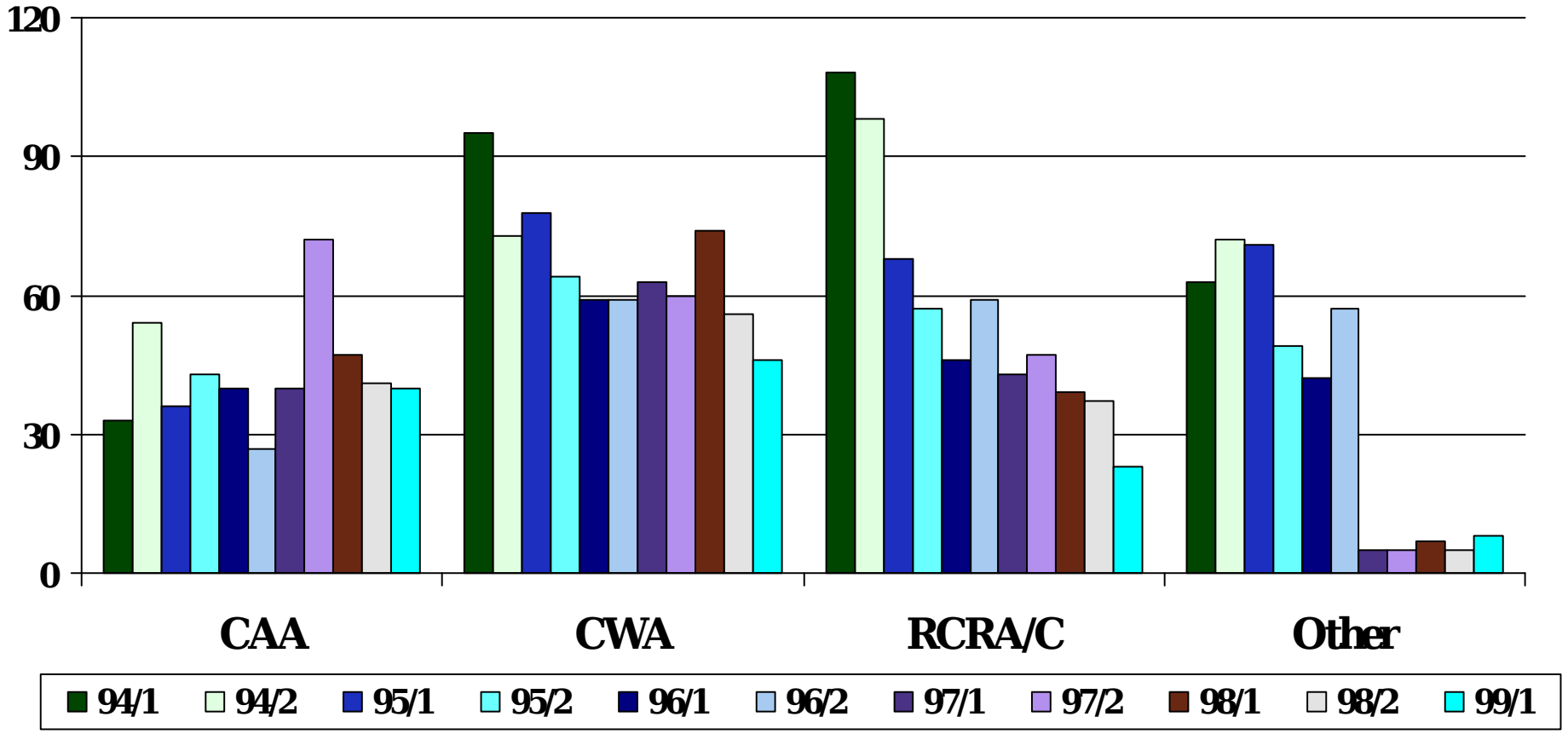
*Other includes asbestos abatement, SDWA, spill cleanup, MARPOL, etc.

Pollution Prevention Non-Recurring Investments

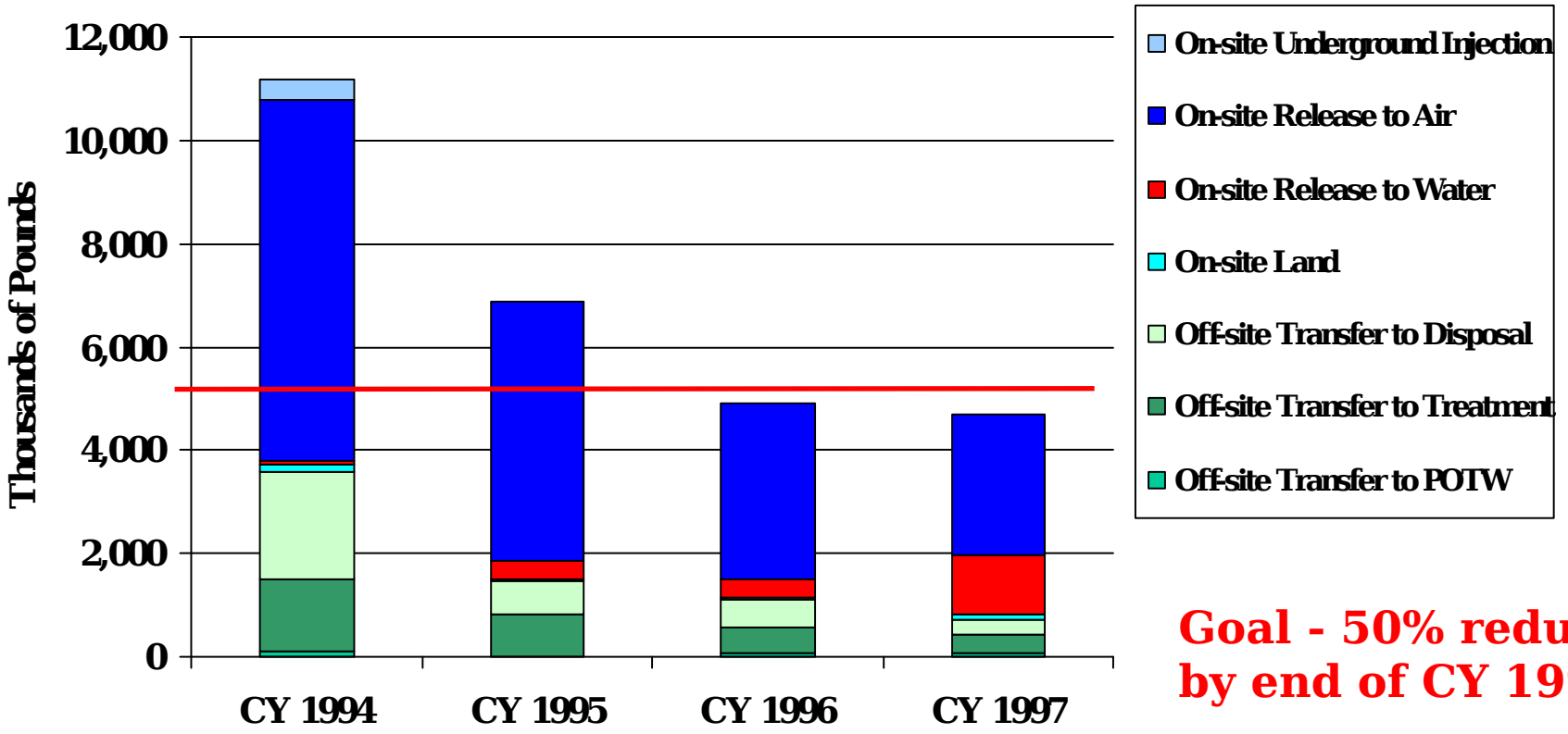


*Other includes opportunity assessments, preparing acquisition strategies, etc.

Compliance Enforcement Actions Received By Statute



Pollution Prevention
Toxic Release Inventory



Goal - 50% reducti
by end of CY 1999

Need for Good Metrics

Improved Management

- ***"In business, we can effectively manage what we can measure. A team without a scoreboard is not playing the game; it is only practicing."***

  Global Environmental Management Initiative

Improved Efficiency

- ***"Most measures of environmental performance are based on government reporting requirements. Firms now seek improved metrics to assess material use efficiency, energy consumption, disposal costs, and internal recycling in manufacturing processes."***

  National Academy of Engineering

Trends in Environmental Metrics

- **The globalization of metrics**
- **Increasing emphasis on sustainability in an environmental context and efforts to develop sustainability metrics**
- **Increasing use of environmental management systems as benchmarks of environmental performance**
- **Emphasis on the integration of environmental performance with the goal of reducing costs and material losses, and improving yield, market share, and profitability.**

Concepts In Successful Metrics Programs

Alignment

- **Blending environmental performance measurement with business measurement, data collection, reporting and management to ensure consistency and to minimize redundancy and incompatibility**

Accountability

- **Not only must employees and business units be held accountable, but management must clearly define expectations**

Continuous Improvement

- **Key link to plan/do/check/act cycle of management systems**

Metric Planning Considerations

Per GEMI

- **Select metrics that drive performance**
- **Institutionalize procedures for collecting, evaluating, and reporting data**
- **Use data already being collected for other business purposes, such as energy and water use**
- **Define and update performance expectations**
- **Identify who is accountable**

Types of Indicators for Metrics

	Leadin	*Lagging*
Measure:	**Process Input**	**End-of-Process or Outp**
Approach:	**Quantitative or Qualitative**	**Quantitative**
Strength:	**Reflect Current or Future Rather than Past Performance**	**Easy to Quantify and Understand**
Weakness:	**Often Difficult to Quantify and Evaluate**	**Root Causes Not Identified**

Examples:

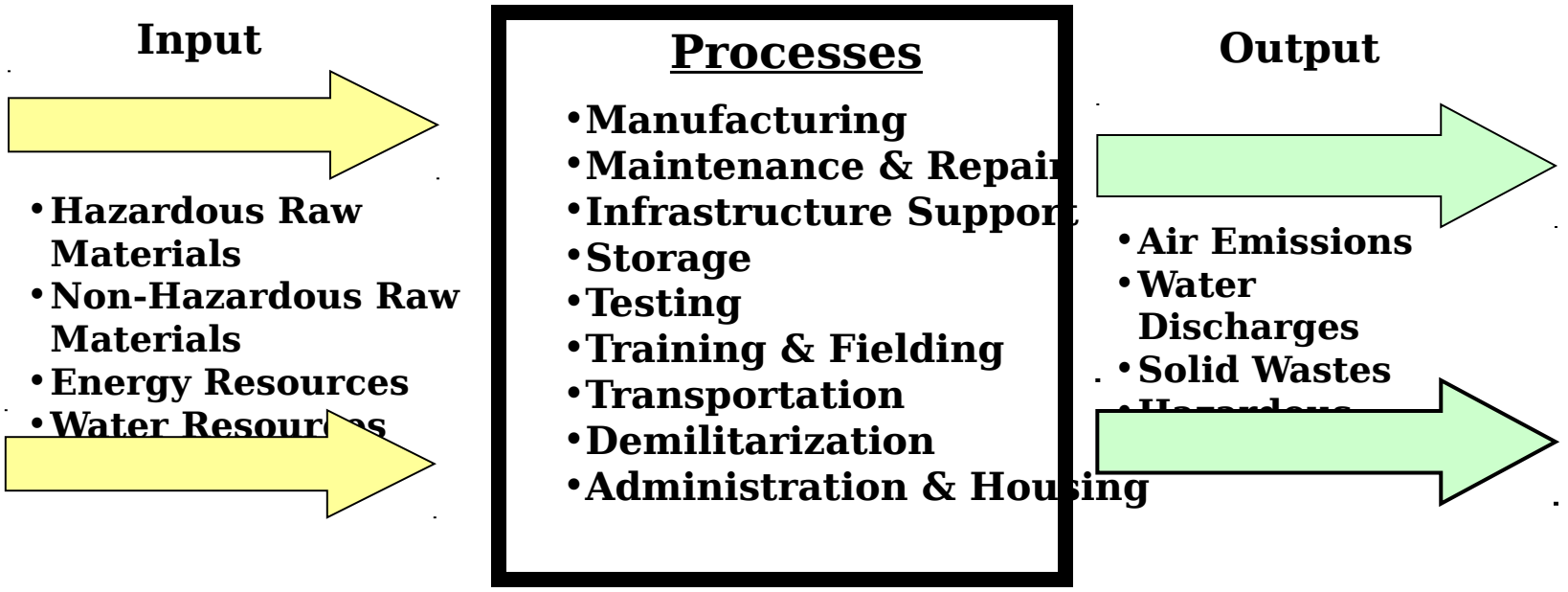
Toxic Materials Elimin
Tons of High Sulfur Co

Criteria Air Pollutants
Enforcement Actions, Fines

Environmental

Framework

Leading Indicators ***Lagging Indicator***



Pollution Prevention Emphasis **End-of-Pipe Emphasis**

Environmental

Hazardous Materials/Wastes

Lagging Indicators	Organization
TRI releases	DoD GM; DuPont; Dow; World Business Council for Sustainable Development; National Academy of Engineering; North Carolina DEP (top 10)
Hazardous wastes generated, recycled, shipped off-site for treatment	DoD Conoco; Novartis: National Academy of Engineering; North Carolina DEP
Ozone depleing substances releases	National Academy of

Hazardous Materials/Wastes (Continued)

Leading Indicators	Organization
None	DoD
Ozone Depleting Substances	GM; National Academy of Engineering; Netherlands Ministry of Defence
Global warming chemicals	National Academy of Engineering
Hazardous/Toxic materials	Motorola; Novartis; Baxter; Novo Nordik; National Academy of Engineering; Canadian

Hazardous Materials/Wastes (continued)

Leading Indicators	Organization
Green Procurement	Canadian Government
Reduced material intensity of goods andservices	World Business Council for Sustainable Development
Extended product durability	World Business Council for Sustainable Development

Driving Air Emissions

Lagging Indicators	Organization
Criteria air pollutants from stationary sources	**GM; DuPont; Conoco; Novartis; ICI; National Academy of Engineering (for chemical/paper & pulp industries); North Carolina DEP (special index); Netherlands Ministry of Defence**
Criteria air pollutants from mobile sources	**GM; National Academy of Engineering (for automotive industry); Netherlands Ministry of Defence**
Greenhouse Gas	nvironmental

Driving Air Emissions (Continued)

Leading Indicators	Organization
Alternate fueled vehicles (AFVs)	DoD Canadian Government (fleet costs per passenger mile)
Stationary sources energy usage	DoD (BTUs per gross Square Foot) GM; Baxter; Novartis; Anheuser-Busch; ICI; Novo Nordik; National Academy of Engineering; World Business Council for Sustainable Development; Netherlands

Driving Air Emissions (Continued)

Leading Indicators	Organization
Percentage of installations having energy audits	**Canadian Government**
Mobile sources energy usage	**Canadian Government; Netherlands Ministry of Defence**

Conclusions

- **Industry is linking major pollutant outputs to inputs - - - *materials, energy and water*.**
- **All industries surveyed have mix of leading and lagging metrics.**
- **Companies are also measuring costs of inputs and outputs for assessing overall process environmental performance.**

Revising Pollution Prevention and Compliance Metrics

GOALS

- **Improve measurement of DoD's impact on the environment**
- **Include both leading and lagging indicators**
- **Use data already collected**
- **Be multi-media, with emphasis on Pollution Prevention**
- **Incorporate cost drivers**
- **Tie to Military Mission**
- **Make metrics meaningful to senior management**
- **Make metrics understandable for non-environmental audiences, both inside and outside DoD**

Back-Up Information

Environmental Security Vision Statement

To have fully incorporated environmental, health and safety values into the culture of the Department of Defense. These core values are recognized by the uniformed and civilian customers throughout the Department of Defense and its external stakeholders not only as key elements of national security policy, but as a necessary underpinning of sound business practices that allow the Department to maximize its financial and human resource potential. They are vital parts of all operational and business decisions whereby the safety and health of our people, protection of weapons systems, facilities, and the environment are integrated into all worldwide national defense activities.

Environmental Security Mission Statement

Responsible to the Under Secretary of Defense (Acquisition & Technology) for global Environmental Security

policy, oversight, advocacy, and representation of environmental, safety, occupational health, pest management, explosive safety, and fire and emergency services programs for defense activities that

ensures cost effective and efficient use of resources.

Environmental Security Goals

- **Support readiness of U.S. Forces by ensuring access to air, land, and water for training and operations**
- **Improve quality of life by protecting military personnel & families from environmental, safety, and health hazards**
- **Ensure weapons systems, logistics, installations, et.al., have greater performance, lower lifecycle costs, and minimal health and environmental effects**
- **Serve customers, clients, stakeholders through public participation and advocacy**
- **Enhance international security through military-to-military cooperation**

Terminology

- ***Indicators***
  - **Refer to a variety of data on an issue being focused on (e.g., hazardous waste output)**
  - **Report trends in environmental conditions**
  - **Assess the effectiveness of efforts in protecting the environment**
  - **Experts agree that indicator categories should address:**
    - ***Materials***
    - ***Energy***
    - ***Water***
    - ***Waste Emissions***

Terminology (cont'd)

- ***Absolute Data***
  - **Raw data**
  - **(e.g., total wastes or emissions in tons)**
- ***Normalized data***
  - **Allows comparison across space and time**
  - **(e.g., tons wastes per unit produced or water consumed per person hours)**

Terminology (cont'd)

- ***Metrics***
  - **Are the narrowest level which refers to particular measures of performance indicators (e.g., BTUs per month, pounds per year)**
  - **A measurement system should consider three attributes:**
    - ***Time***
    - ***Quality***
    - ***Cost***

Non-Hazardous Materials/Wastes

Lagging Indicators	Organization
Solid wastes treated or landfilled	**DoD** **GM; Baxter; National Academy of Engineering; North Carolina DEP**
Solid wastes amount/cost per person /installation	**(includes tires & white goods)** **Canadian Government**
Entities with source reduction/recycling programs	**North Carolina DEP**

Non-Hazardous Materials/Wastes (Continued)

Leading Indicators	Organization
Solid wastes recovered and recycled	**DoD** **GM; Novartis; National Academy of Engineering (for automotive industry);** **North Carolina DEP (by category);** **Canadian Government**
Percentage of solid wastes diverted from landfills	**DoD (new metric)** **Canadian Government**

Non-Hazardous Materials/Wastes (Continued)

Leading Indicators	Organization
Packaging Material	Baxter; Anheuser-Busch; GM; Du Pont; Novo Nordik; National Academy of Engineering (for chemical industry)
Non-hazardous materials used and recycled	Novartis; North Carolina DEP
Product with reused or renewable materials	GM; National Academy of Engineering (for automotive/chemical industries); World Council for Sustainable Development
Products designed for	

Water Resources

Lagging Indicators

Number of wastewater treatment systems vs. number meeting NPDES permit standards

Water pollution control amounts/costs

Organization

DoD

North Carolina DEP; Canadian Government (facilities & ships)

Conoco; Novartis; Anheuser-Busch; ICI; National Academy of Engineering (TOC and BOD)

Water Resources (Continued)

Leading Indicators	Organization
Facilities water use	**GM; Novartis; Anheuser-Busch; National Academy of Engineering (for chemical industry)**
Drinking water usage per employee	**Canadian Government; Netherlands Ministry of Defence**
Percentage of water saving facilities vs. number of water connected facilities	**Canadian Government; Netherlands Ministry of Defence**

Information Sources

Global Environmental Management Initiative (GEMI)

- Procter & Gamble
- Anheuser-Busch
- DuPont
- Conoco
- AT&T
- Browning-Ferris Industries
- Ciba Specialty Chemicals
- Coors Brewing
- Tenneco
- Bristol-Myers Squibb
- Duke Power Company
- Dow Chemical
- Eastman Kodak
- Georgia Pacific
- Halliburton Company
- Merck
- Olin Corporation
- Southern Company
- Waste Management
- Coca Cola Company

Information Sources (cont

World Business Council for Sustainable Development (WBCSD) Report - Inputs From:

- **ICI**
- **SustainAbility (UK)**
- **Novo Nordik (Denmark)**
- **Landis & Gyr**
- **Columbian BCSD**
- **Norway**
- **Electrowatt**
- **Sony Europe**
- **Austria**

Information Sources (cont

Coalition for Environmentally Responsible Economies (CERES) Global Reporting Initiative

- **Bethlehem Steel**
- **Coca Cola, USA**
- **ITT Industries**
- **General Motors**
- **Sunoco**
- **Baxter International**
- **Polaroid**

National Academy of Engineering supported by U.S. - Asia Environmental Partnership report on:

- **Auto Manufacturing**
- **Electronics Manufacturing**
- **Chemical Manufacturing**
- **Paper & Pulp Industry**

Information Sources (cont

Novartis

- **Pharmaceuticals**
- **Agricultural products**
- **Health nutrition**

EPA (with support from Florida State University)

Other Countries

- **Canadian Government**
- **Netherlands Defense Ministry**